

DR.POURNASIRI





Fluid therapy in anuria/polyuria

Dr.Zahra Pournasiri

Pediatric Nephrologist

Associate Professor Of Pediatric,
Shahid Beheshti University Of Medical Sciences,
SBMU,

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The Holliday and Segar method

Table 56-2 Body Weight Method for Calculating Daily Maintenance Fluid Volume	
BODY WEIGHT	FLUID PER DAY
0-10 kg	100 mL/kg
11-20 kg	1,000 mL + 50 mL/kg for each kg >10 kg
>20 kg	1,500 mL + 20 mL/kg for each kg >20 kg*

Electrolyte


- Required Sodium = 3MEQ/kg
- Required Potassium = 2MEQ/kg
- 1 cc NaCl 3% → 0.5meq Na
- 1 cc NaCl 5% → 0.85meq Na
- 1 cc NaCl 20% → 3.4 meq Na

Required water for any person

- **INSESIBLE WATER LOSS +URINE OUTPUT+DEHYDRATION+ONGOING LOSS**
- **INSESIBLE WATER LOSS +URINE OUTPUT= Maintenance**
- **INSESIBLE WATER LOSS(*Respiratory loss+ Skin loss*) = 400 ml/lit # 1/3 maintenance**

Composition of intravenous solution

Fluid	Na	Cl	K	Ca	Lactate	Osmolality
Normal saline(0.9% Nacl)	154	154	_____	_____	_____	308
1/2NS(0.45% Nacl)	77	77	_____	_____	_____	154
1/4NS (0.225Nacl)	38.5	38.5	_____	_____	_____	77
Ringer	147	156	4	4.5	_____	311
Ringer lactate	130	109	4	3	28	273
DW	_____	_____	_____	_____	_____	252(5%)
1/3(NS) 2/3(DW5%)	51	51	_____	_____	_____	274
1/2(1/2DW5 1/2(1/2NS)	77	77	_____	_____	_____	280



A 5-y-old girl with CRF is admitted in general surgery ward because severe abdominal pain and she is candidate for doing abdominal CT scan. she should be NPO and her physician consulted with you for type and amount of intravenous fluid . Her mother claims her urine in 24 hours is only 200 cc.

Weight of the patient is 18 kilogram and her body surface area is 0.7 m². serum electrolyte is in normal range

Required water for any person

- **INSESIBLE WATER LOSS + URINE OUTPUT + DEHYDRATION + ONGOING LOSS**

- *INSESIBLE WATER LOSS + URINE OUTPUT = Maintenance*

- INSESIBLE WATER LOSS(*Respiratory loss + Skin loss* = 400 ml/lit # 1/3 maintenance

- **1/3 maintenance + ongoing loss**




Table 56-9	Adjusting Fluid Therapy for Altered Renal Output
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OLIGURIA/ANURIA

Replacement of insensible fluid losses (25-40% of maintenance) with D5 $\frac{1}{2}$ NS


Replace urine output mL/mL with D5 $\frac{1}{2}$ NS \pm KCl


POLYURIA

Replacement of insensible fluid losses (25-40% of maintenance) with D5 $\frac{1}{2}$ NS \pm KCl

Measure urine electrolytes

Replace urine output mL/mL with solution based on measured urine electrolytes

- 
- 350 cc DW5% +7.7 CC Nacl20%
(75meq/lit) /24 hr (without potassium)




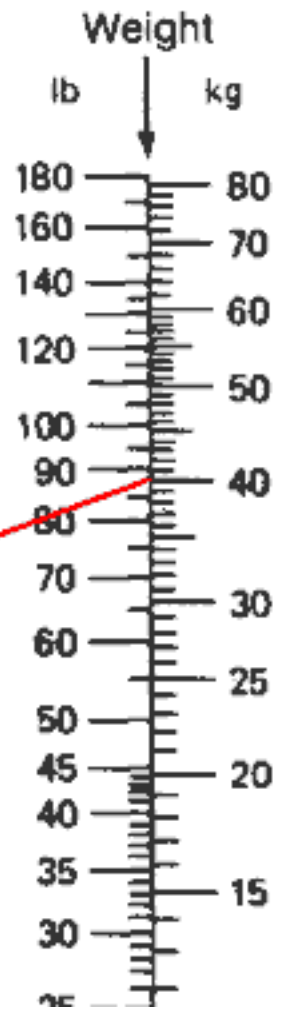
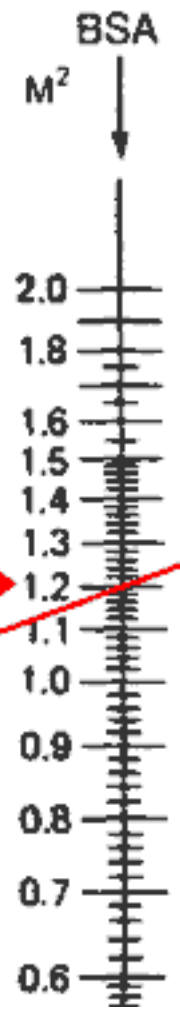
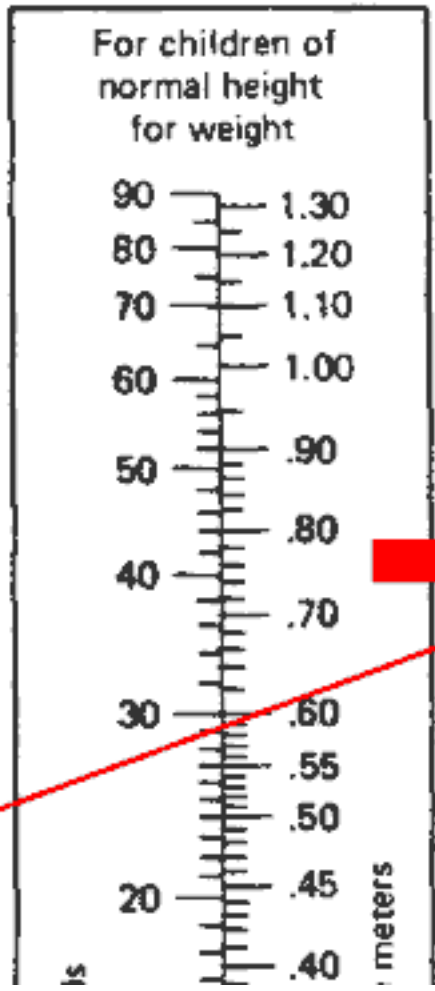
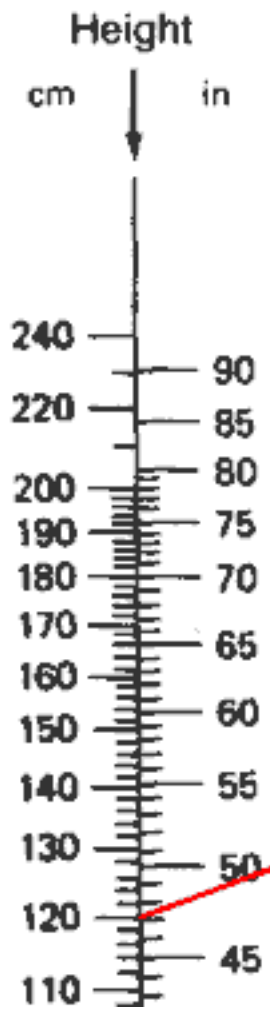
A 5-y-old girl is admitted in neurosurgery ward and is candidate for remove of craniopharingioma tomorrow morning .Her physician consulted with you for time of beginning fasting , type and amount of intravenous fluid before surgery and after operation. She suffer from polyuria and DI duo to this tumor and her urine output is 6cc/hr.

Weight of the patient is 18 kilogram and her body surface area is 0.7 m².serum electrolyte is in normal range ,urin sodium 75 meq/lit,urine potassium 20 meq/lit

Required water for this person

- **INSEESIBLE WATER LOSS(1/3 Maintenance=350 cc) +URINE OUTPUT(6ml/kg/hr)+DEHYDRATION+ONGOING LOSS**
- **350 cc + 6*18*24 =2950 cc**
- **Type of fluid ??**

- 
- 2950 cc $\frac{1}{2}$ $\frac{1}{2}$ +29.5 cc kcl 15% /24 hrs
 - Or
 - 2950 cc DW% +66 ccNacl20% +29.5 cckcl 15%/24 hrs.



Total body surface=

$$\frac{(\text{Body weight} \times 4) + 7}{\text{Body weight} + 90}$$

BSA Calculation
Mosteller Formula

$$\text{BSA (m}^2\text{)} = \sqrt{\frac{[\text{height (cm)} \times \text{weight (kg)}]}{3600}}$$